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Post-traumatic stress and oral health among asylum seekers in Hong Kong

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Post-Traumatic Stress and Oral Health among Asylum Seekers in Hong Kong

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1.0 ABSTRACT

Objectives: To describe the oral health status of asylum seekers in Hong Kong; to describe traumatic experiences among asylum seekers in Hong Kong and to identify associations between Post-Traumatic Stress Disorder (PTSD) and oral health status.

Methods: In collaboration with non-governmental organizations working with asylum seekers in Hong Kong, the researchers invited 97 asylum seekers to participate in this community health projects to provide an oral health screening and provision of basic oral health care.

Results: The response rate to the project was 87% (84/97). Dental caries experience was high and most subjects had untreated decayed teeth (61.9%, 52; DT 1.51 (SD 2.09)). Periodontal health was poor with over half having periodontal pockets (57.1%, 48). One in five reported experiencing dental trauma from assaults (22.6%, 19) and 53.6% (45) had clinical evidence of dental trauma. The mean Harvard Trauma Questionnaire (HTQ) Score (an indicator of psychological distress among refugees) was 2.16 (0.57) and approximately a third (31.0%, 26) had signs of Post-traumatic Stress Disorder (PTSD). Most (63.1%, 53) reported experiencing dental problems while residing in Hong Kong but few managed to access dental care (24.5%, 13/53). Experience of PTSD was associated with self-reports of dental trauma ($P<0.05$). Basic oral health services were provided to asylum seekers.

Conclusion: Oral health problems among asylum seekers in Hong Kong are substantial and for the most part remain neglected and untreated. Experience of Post-traumatic Stress Disorder was associated with self-reports of dental trauma encountered in assaults. These findings have implications for the dental team in providing oral health for one of the most socially excluded groups.

2.0 INTRODUCTION

The term refugee, as defined by the United Nations in 1951, is a person owing to a well-founded fear of being persecuted on account of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of their nationality, and is unable to, or owing to such fear, is unwilling to avail him/herself of the protection of that country [(1)]. This definition was expanded upon in 1967 to include persons who had fled war or other violence in their home country [(2)]. Until a request for refugee has been accepted, the person is referred to as an 'asylum seeker' [(3)]. The U.S. Committee for Refugees and Immigrants estimate 13,599,900 refugees globally [(4)]. As in of January 2009, there were officially 1,112 asylum seekers and 103 refugees in Hong Kong [(5)].

Refugees and asylum seekers represent one of the most vulnerable groups in society. Psychological disorders including post-traumatic stress, psychological burnout and panic problems are common among these communities [(6)]. Physical trauma is highly prevalent among refugees, particularly among those from war torn regions [(7)]. Communicable diseases pose a significant threat to refugees/asylum seekers who have lived in camps [(8)]. In addition, these communities have different health beliefs and practices with implications for health and health care in their host countries [(9)]. Thus, not surprisingly, refugees/asylum seekers have higher morbidity and mortality compared to others in communities that they flee to.

Among all health problems, oral health problems owing to their high prevalence are amongst the most common problems faced by refugees in immigrant detention centers and among asylum seekers recently resettled [(9,10)]. Evidence of trauma to the dental and

facial regions has been reported by numerous refugees/asylum seekers communities [11-13]. Oral health is often neglected during the periods of transition and chronic oral diseases become acute when access to care is restricted [11-13]. Oral health assessments have been valuable in forensic dental investigations of refugees/asylum seekers to provide estimates of age and verification of traumatic experiences [14, 15]. Since the assessment of oral health among the Vietnamese boat people in Hong Kong over two decades ago, further studies and information on refugees/asylum seekers in Hong Kong have been absent [16]. Given the current increase in asylum seekers, it is timely and appropriate to consider the oral health of asylum seekers in Hong Kong. Thus, this was the focus of this community health project and specifically to identify the relationship between oral health and post-traumatic stress among the asylum seekers.

2.0 AIMS AND OBJECTIVES

1. To describe the oral health status of asylum seekers in Hong Kong.
2. To describe traumatic experiences (including dento-facial trauma) among asylum seekers in Hong Kong.
3. To identify associations between traumatic experiences and oral health status of asylum seekers.

3.0 MATERIAL AND METHODS

3.1 Sample

It was not possible to identify a sampling frame for all asylum seekers in Hong Kong, given that many asylum seekers are unregistered. Moreover, the temporary and transient nature of the group posted another challenge to establishing a sample frame. A number of non-governmental organizations (NGOs) are concerned with the promotion of welfare for refugees/asylum seekers. Christian Action (http://www.christian-action.org.hk) and Vision First (http://www.visionfirstnow.org) are two charitable organizations, which promote the welfare of asylum seekers and refugees through arranging shelter and access to medical services, counseling and education. These two organizations were contacted and invited to participate in the community health project (Appendix 1). Given the limitations of resources, the sample (convenient sample) was limited to 100 refugees/asylum seekers (approximately 10% of the total estimated number of refugees/asylum seekers in Hong Kong). The sample was a non-random sample (convenient sample).

3.2 Data Collection

The community health project consisted of two components; a) screening, and b) delivery of basic oral health care. The screening involved a questionnaire survey and clinical/radiographic examinations.

3.2.1 Questionnaire Survey

A questionnaire was developed for the community health project consisting of four sections (Appendix 2). Section A was concerned with the previous dental care of participants (past dental problems, management of dental problems, types of dental services sought, oral hygiene measures and snacking habits). Section B assessed self-reported experiences of dento-facial and/or head trauma (loss of consciousness and duration if applicable, diagram indicating the site of trauma in the head region). Section C consisted of the Harvard Trauma Questionnaire, a forty-item questionnaire on trauma symptoms experienced in the past week. Section D included questions relating to sociodemographic factors (age, gender, country of origin, education level, duration of stay in Hong Kong, reason for fleeing). The questionnaire was made available in English and French. The self-administered questionnaires were completed in a private room in the Reception and Primary Care (RPC). Assistance to the participants while completing the questionnaire was provided by two of the community health project group members and a bilingual asylum seeker.

3.2.2 Clinical Examination

The clinical examinations of the participants were carried out in the examination room in the RPC under supervision of the community health project tutor. The clinical exam was divided into three sections, Section A assessment of dental caries status, Section B assessment of periodontal status and Section C assessment of dental and facial trauma.

Dental caries status was assessed using the methods and criteria as described by WHO for conducting basic oral health survey [17], Table 3.1.

Table 3.1 Dental Caries Status Assessment Form

				55	54	53	52	51	61	62	63	64	65			
	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Crown																
				85	84	83	82	81	71	72	73	74	75			
	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Crown																

Primary Teeth	Permanent Teeth	Status
A	0	Sound
B	1	Decayed
C	2	Filled, with decay
D	3	Filled, no decay
E	4	Missing, as a result of caries
-	5	Missing, any other reasons
F	6	Fissure sealant
G	7	Bridge abutment, special crown or veneer/implant
-	8	Unerupted tooth (crown) / unexposed root
T	T	Trauma (fracture)
-	9	Not recorded

Periodontal health status was assessed using the Community Periodontal Index (CPI) [17]. Index teeth from the six sextants of the mouth were examined (17/16, 11, 26/27, 37/36, 31, 46/47) using the special designed CPI probe, Table 3.2.

Table 3.2 Community Periodontal Index

Community Periodontal Index (CPI)

17/16	11	26/27
47/46	31	36/37

0 = healthy
1 = bleeding
2 = calculus
3* = pocket 4-5mm (black band on probe partially visible)
4* = pocket 6mm or more (black band on probe not visible)
X = excluded sextant
9 = not recorded
*not recorded for under 15 years of age

Dental trauma was assessed according to examination procedures and criteria of Locker's Dental Trauma Index [18] (Table 3.3). Facial trauma was evaluated from assessment of occlusion (step deformity), extra-oral defects (i.e. scarring) and temporomandibular joint disorder (i.e. signs and symptoms).

Table 3.3 Dental Trauma Examination

				55	54	53	52	51	61	62	63	64	65				
	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28	
Crown																	
				85	84	83	82	81	71	72	73	74	75				
	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38	
Crown																	

Code	Status
0	Present and sound
1	Unrestored enamel fracture that does not involve dentine
2	Unrestored fracture that involves dentine
3a	Untreated damage as evidenced by; Dark discoloration as compared to other teeth
3b	Untreated damage as evidenced by; Presence of a swelling or fistula in the labial or lingual vestibule adjacent to an otherwise healthy tooth
4	Tooth missing due to trauma
5a	Fracture restored either with a full crown or a less extensive restoration
5b	A missing tooth replaced by a denture or bridge pontic
5c	Presence of a lingual restoration as a sign of endodontic treatment
9	Any tooth or space not categorized as 0 though 5

3.3 Statistical Analysis

Data were entered using Statistical Package for the Social Sciences (SPSS) program version 16.0. Frequency tables were generated to determine demographic profile of the participants, previous dental care experiences, related trauma experiences and symptoms. A summary of the Harvard Trauma Questionnaire (HTQ) scores was calculated and the presence of Post-Traumatic Stress Disorder (PTSD) determined among the sample. An overall HTQ score was calculated by summating response to all 40 items divided by 40. Presence of PTSD reflects a HTQ score of $\geq$ 2.5.

Summary statistical measures (median (inter-quartile range), mean (standard deviation), prevalence) were calculated. Variations in HTQ scores were assessed using t-test (for binary categorical independent factors); ANOVA one-way analysis for variants (for multiple categorical independent factors); Correlation between HTQ scores and continuous variables (i.e. age, DMFT) was assessed by calculating Spearman's correlation coefficient. Variations in Post-traumatic Stress Disorder (PTSD) were assessed using chi-square test (for categorical independent factors).

4. RESULTS

4.1 Response Rate and Profile of the Group

A total of 97 asylum seekers were invited to the community health project. Eighty nine (91.7%) attended the screening examination. Five were excluded from the analysis of the project data because of incompletion of the questionnaire and language difficulties. Thus, the overall response rate was 87% (84/97).

The sociodemographic profile of the sample is presented in Table 4.1. The majority of the subjects was aged 30-40 years old (45.2%, 38). Most were male (65.5%, 55). The majority had completed high school education (48.8%, 41). Approximately half of the asylum seekers were from Asia (53.6%, 45) and the rest predominantly from Africa (45.2%, 38). The majority of the asylum seekers reported fleeing from their countries due to political persecution (48.8%, 41). A quarter of the asylum seekers had come to Hong Kong within the past year (25.0%, 21).

Table 4.1 Socio-demographic Profile of Asylum Seekers

Variable	% (n)
Age (years)	
Below 20 years	7.1 (6)
20-30 years	29.8 (25)
30-40 years	45.2 (38)
40-50 years	10.7 (9)
50 years or above	7.1 (6)
Gender	
Male	65.5 (55)
Female	34.5 (29)
Continent	
Asia	53.6 (45)
Africa	45.2 (38)
Others	1.2 (1)
Education level	
No formal education	6.0 (5)
Primary school	8.3 (7)
Middle school	13.1 (11)
High school	48.8 (41)
College	23.8 (20)
Reason for fleeing	
Political persecution	48.8 (41)
Religious persecution	11.9 (10)
Others	39.3 (33)
Duration of stay in Hong Kong	
Less than or equal to 1 year	25.0 (21)
2-5 years	53.6 (45)
More than 5 years	21.4 (18)

4.2 Reported Dental Experience and Dental Trauma

4.2.1 Reported Dental Experience

Most (63.1%, 53) of the asylum seekers reported experiencing dental problems since their arrival in Hong Kong. Among those who experienced dental problems (53), few managed to access dental services (24.5%, 13/53); most self-medicated or tried to manage the problem themselves (58.5%, 31/53). A key reason for why asylum seekers did not seek dental care despite having a dental problem was financial concerns (87.1%, 27/31), Table 4.2.

Table 4.2 Previous dental experiences

Variable	% (n)
Experience of dental problems	
Yes	63.1 (53)
No	36.9 (31)
Management of recent dental problem	
Went to a dentist	24.53 (13)
Went to a medical doctor	18.87 (10)
Self medicated	43.40 (23)
Others	15.09 (8)
Types of services received	
Private dental clinic	21.74 (5)
Government dental clinic	34.78 (8)
Non-government/ Charity organization clinic	13.04 (3)
Prince Philip Dental Hospital	13.04 (3)
Others	30.43 (7)
Reason for not seeking professional help	
Financial concerns	87.10 (27)
Unsure of where to go	16.13 (5)
Problem was not serious to require treatment	3.23 (1)
Did not want to be identified by authorities	0 (0)
Others	16.13 (5)

4.2.2 Reported Dental and Facial Trauma

Approximately one in five asylum seekers reported that they experienced dental trauma (22.6%, 19). One in six claimed they had been beaten to their head or had other types of injury to the head respectively (15.5%, 13).

4.3 Trauma Symptoms Experienced (Harvard Trauma Questionnaire)

The Harvard Trauma Questionnaire scores ranged from 1.00 - 3.78, the mean score was 1.97 (SD 0.62), and the median score was 1.92 (IQR 1.51, 2.43). The three most prevalent symptoms experienced were '*Spending time thinking why these events happened to you*' (72.6%, 61); '*Feeling as if you don't have a future*' (71.4%, 60); '*Having difficulty dealing with new situation*s' (71.4%, 60), Table 4.3. A third of the asylum seekers (31.0%, 26) had an HTQ and/or a DSM-IV score equal to or larger than 2.5, and thus could be considered as having symptoms of Post-traumatic Stress Disorder (PTSD), Table 4.4.

Table 4.3 Responses to the Harvard Trauma Questionnaire

Trauma Symptom	Not at all	A little	Quite a bit	Extremely
Recurrent thoughts or memories of the most hurtful or terrifying events	41.7%(35)	17.9%(15)	13.1%(11)	27.4%(23)
Feeling as though the event is happening again	39.3% (33)	20.2%(17)	21.4%(18)	19.4%(16)
Recurrent nightmares	50.0%(42)	19.0%(16)	16.7%(14)	14.3%(12)
Feeling detached or withdrawn from people	56.0%(47)	11.9%(10)	21.4%(18)	10.7%(9)
Unable to feel emotions	69.0%(58)	14.3%(12)	10.7%(9)	6.0%(5)
Feeling jumpy, easily startled	60.7%(51)	17.9%(15)	15.5%(13)	6.0%(5)
difficulty concentrating	58.3%(49)	16.7%(14)	10.7%(9)	14.3%(12)
Trouble sleeping	41.7%(35)	25.0%(21)	13.1%(11)	20.2%(17)
Feeling on guard	58.3%(49)	13.1%(11)	15.5%(13)	13.1%(11)
Feeling irritable or having outbursts of anger	52.4%(44)	23.8%(20)	11.9%(10)	11.9%(10)

Trauma Symptom	Not at all	A little	Quite a bit	Extremely
Avoiding activities that remind you of the traumatic or hurtful event	42.9%(36)	16.7%(14)	19.0%(16)	21.4%(18)
Inability to remember parts of the most hurtful or traumatic events	50.0%(42)	25.0%(21)	10.7%(9)	14.3%(12)
Less interest in daily activities	56.0%(47)	23.8%(20)	6.0%(5)	14.3%(12)
Feeling as if you don't have a future	28.6%(24)	23.8%(20)	16.7%(14)	31.0%(26)
Avoiding thoughts or feelings associated with the traumatic or hurtful events	42.9%(36)	19.0%(16)	16.7%(14)	21.4%(18)
Sudden emotional physical reaction when reminded of the most hurtful or traumatic events	32.1%(27)	26.2%(22)	11.9%(10)	29.8%(25)
Feeling that you have less skills than you had before	44.0%(37)	23.8%(20)	11.9%(10)	20.2%(17)
Having difficulty dealing with new situations	28.6%(24)	19.0%(16)	20.2%(17)	32.1%(27)
Feeling exhausted	36.9%(31)	29.8%(25)	11.9%(10)	21.4%(18)
Bodily pain	36.9%(31)	33.3%(28)	14.3%(12)	15.5%(13)
Troubled by physical problems	56.0%(47)	28.6%(24)	8.3%(7)	7.1%(6)
Poor memory	63.1%(53)	17.9%(15)	11.9%(10)	7.1%(6)
Finding out or being told by other people that you have done something that you cannot remember	65.5%(55)	20.2%(17)	6.0%(5)	8.3%(7)
Difficulty paying attention	56.0%(47)	23.8%(20)	14.3%(12)	6.5%(5)
Feeling as if you are split into two people and one of you is watching what the other is doing	66.7%(56)	19.0%(16)	7.1%(6)	7.1%(6)

Trauma Symptom	Not at all	A little	Quite a bit	Extremely
Feeling unable to make daily plans	51.2%(43)	20.2%(17)	14.3%(12)	14.3%(12)
Blaming yourself for things that have happened	64.3%(54)	15.5%(13)	14.3%(12)	6.0%(5)
Feeling guilty for having survived	60.7%(51)	27.4%(23)	6.0%(5)	6.0%(5)
hopelessness	50.0%(42)	23.8%(20)	10.7%(9)	15.5%(13)
Feeling ashamed of the hurtful or traumatic events that have happened to you	51.2%(43)	15.5%(13)	10.7%(9)	22.6%(19)
Feeling that people do not understand what happened to you	33.3%(28)	23.8%(20)	14.3%(12)	28.6%(24)
Feeling others are hostile to you	57.1%(48)	17.9%(15)	16.7%(14)	8.3%(7)
Feeling that you have no one to rely upon	41.7%(35)	31.0%(26)	17.9%(15)	9.5%(8)
Feeling that someone you trusted betrayed you	36.9%(31)	32.1%(27)	15.5%(13)	15.5%(13)
Feeling humiliated by your experience	39.3%(33)	28.6%(24)	14.3%(12)	17.9%(15)
Feeling no trust in others	44.0%(37)	22.6%(19)	11.9%(10)	21.4%(18)
Feeling powerless to help others	39.3%(33)	13.1%(11)	11.9%(10)	35.7%(30)
Spending time thinking why these events happened to you	27.4%(23)	19.0%(16)	21.4%(18)	32.1%(27)
Feeling that you are the only one that suffered these events	60.7%(51)	16.7%(14)	15.5%(16)	7.1%(6)
Feeling a need for revenge	77.4%(65)	10.7%(9)	1.2%(1)	10.7%(9)

Table 4.4 HTQ scores and DSM-IV scores

Score	Mean (SD)	Median (IQR)	Range	Percentage of score >2.5 % (n)
HTQ scores	1.97 (0.62)	1.92 (1.51, 2.43)	1.00 - 3.78	17.86 (15)
DSM-IV scores	2.00 (0.69)	1.94 (1.39, 2.55)	1.00 - 3.63	28.57 (24)

4.4 Clinical Oral Health Status

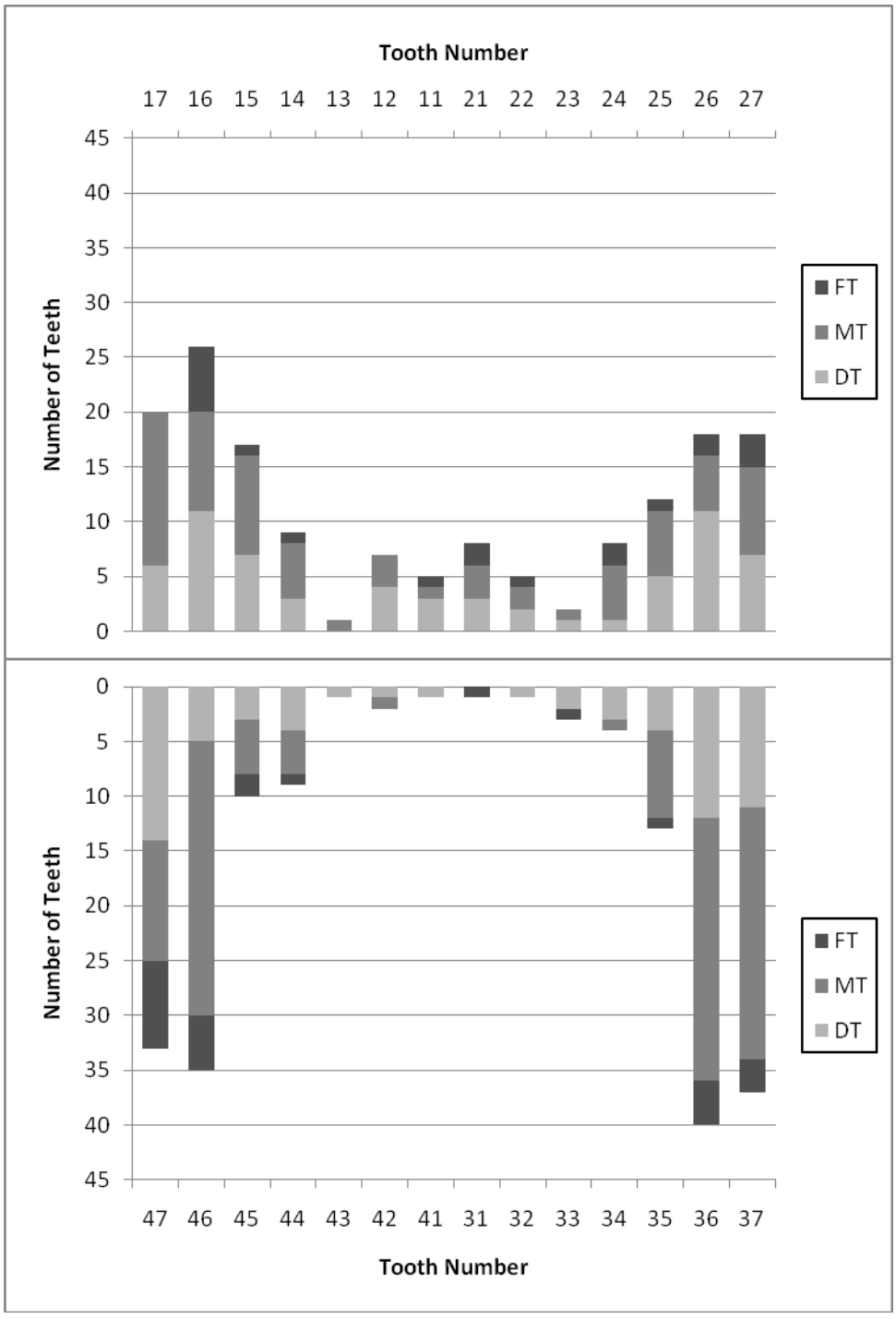
4.4.1 Dental Caries Experience

Most participants had a dental caries experience i.e. DMFT > 0 (81.0%, 68). The mean DMFT was 4.12 (SD 4.48); median DMFT 2.50 (IQR 1.00 - 7.00). Over half (61.9%, 52) had untreated decayed teeth, mean DT was 1.51 (SD 2.09); median DT 1.00 (IQR 0.00 - 2.00). Approximately half had a missing tooth due to caries (48.8%, 41), Table 4.5. Most untreated decay was found on molar teeth although caries among upper central incisors was not uncommon (Figure 4.1).

Table 4.5 Dental caries experience (DMFT)

Index	Prevalence % (n)	Mean (SD)	Median (Quartiles)
DT	61.9 (52)	1.51 (2.09)	1.00 (0.00, 2.00)
MT	48.8 (41)	2.07 (3.08)	0.00 (0.00, 4.00)
FT	27.4 (23)	0.54 (1.13)	0.00 (0.00, 1.00)
DMFT	81.0 (68)	4.12 (4.48)	2.50 (1.00, 7.00)

Figure 4.1 DMFT of the dentition examined



4.4.2 Community Periodontal Index

Over half of the participants (57.1%, 48) had periodontal pockets; 21.4% (18) had the highest CPI score of 4 and 35.7% (30) had the highest CPI score of 3. No participant had the highest CPI score of 0 (healthy) or 1 (bleeding on probing), Table 4.6. The mean number of sextants by CPI score is presented, Table 4.7.

On average, the most repeated CPI score in the 6 sextants was category 2 (3.62, 304). This means more than 3 sextants per asylum seeker had calculus.

Table 4.6 Prevalence of the highest Community Periodontal Index (CPI) score

CPI Score	Prevalence % (n)
0	0 (0)
1	0 (0)
2	42.9 (36)
3	35.7 (30)
4	21.4 (18)

Table 4.7 Mean number of sextants by Community Periodontal Index (CPI) score

CPI Score	Mean number of sextants of CPI score (n)
0	0.32 (29)
1	0.29 (24)
2	3.62 (304)
3	0.81 (68)
4	0.42 (35)
X	0.52 (44)

4.4.3 Clinical Dental and Facial Trauma

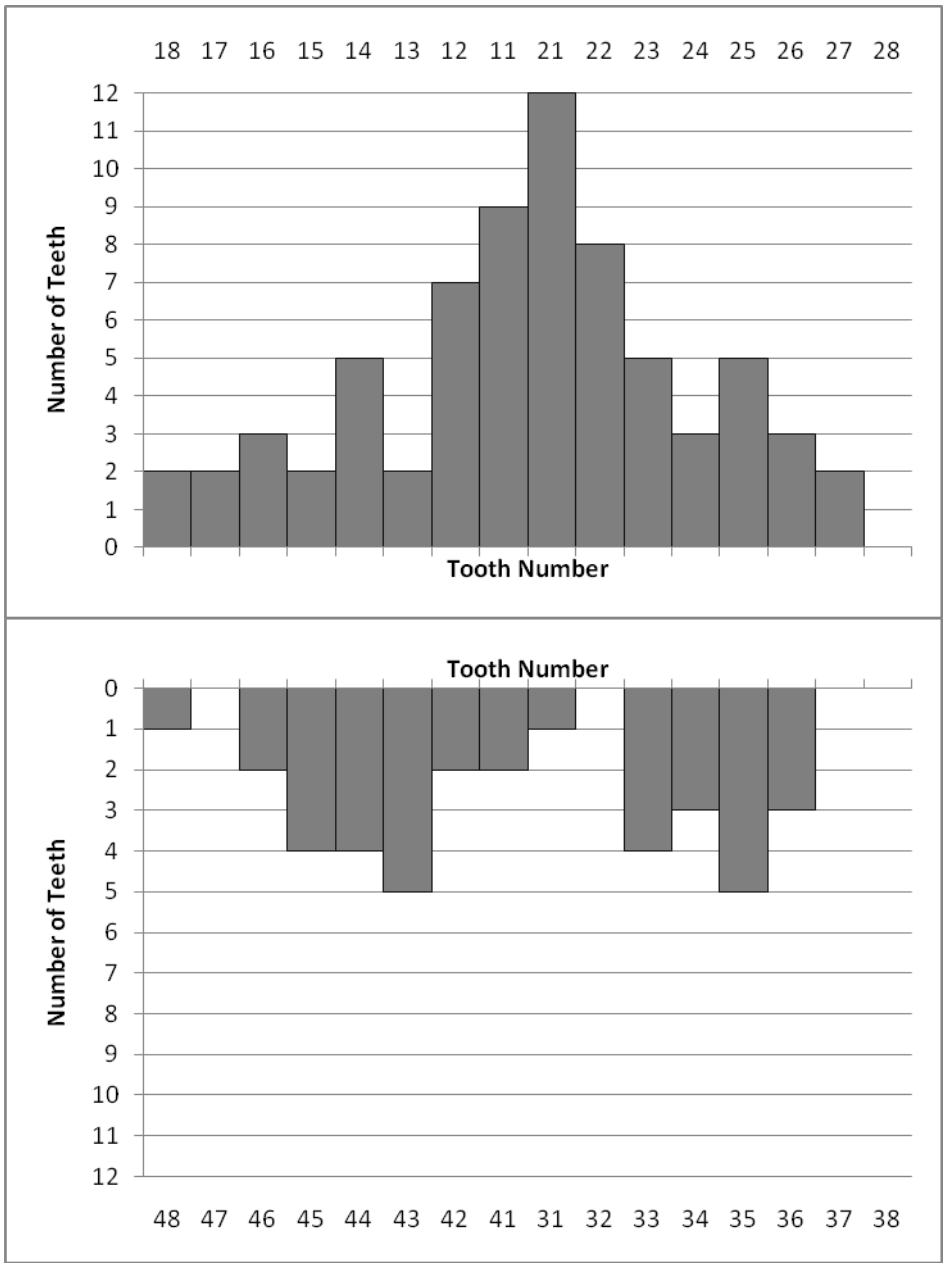
The prevalence of dental trauma was 53.6% (45). For the most part the trauma involving loss of enamel and dentine which remained untreated was 35.7% (30), Table 4.8. On average, each asylum seeker had 1.3 (SD=2.1) teeth with evidence of trauma, Figure 4.2. The number of teeth with trauma ranged from 0 to 13.

On extra-oral examination, the prevalence of facial asymmetry was 2.4% (2) and 8.3% (7) had evidence of facial scarring. The prevalence of signs and symptoms associated with temporomandibular joint disorder: clicking, tenderness, reduced jaw opening, was 13.1% (11). On intra-oral examination of occlusion, the prevalence of anterior open bite was 6% (5), while that of posterior open bite was 1.2% (1).

Table 4.8 Prevalence of dental trauma

Status	Prevalence in all participants % (n)	Prevalence in participants with dental trauma % (n)
Unrestored enamel fracture that does not involve dentine	25.0 (21)	44.7 (21)
Unrestored fracture that involves dentine	35.7 (30)	63.8 (30)
Untreated damage as evidence by dark discoloration as compared to other teeth	1.2 (1)	2.1 (1)
Untreated damage as evidence by presence of swelling or fistula in the labial or lingual vestibule adjacent to an otherwise healthy tooth	0 (0)	0 (0)
Tooth missing due to trauma	0 (0)	0 (0)
Fracture restored either with a full crown or a less extensive restoration	2.4 (2)	4.3 (2)
A missing tooth replaced by a denture or bridge pontic	3.6 (3)	6.4 (3)
Presence of a lingual restoration as a sign of endodontic treatment	1.2 (1)	2.1 (1)

Figure 4.2 Profile of dental trauma



One in five (22.6%, 19) reported experiencing dental trauma, 15.5% (13) reported being beaten to the head; 15.5% (13) reported other types of injury to the head.

4.5 Variations in Trauma Symptom Experiences (HTQ) and Post-traumatic Stress Disorder (PTSD)

4.5.1 Sociodemographic Variations in HTQ Scores and PTSD

Age was not significantly correlated with HTQ scores (r -0.033). Male subjects had marginally higher mean HTQ scores (1.98) than female (1.94), $p>0.05$. There was no significant difference in HTQ scores with respect to continent of origin. Asylum seekers who reported only attaining formal education to primary school level had the highest HTQ scores (2.02, (0.76)) compared to those with other levels of formal education attainment but not significantly so ($p>0.05$). Asylum seekers who came to Hong Kong within the past year tended to have higher HTQ scores. The mean HTQ scores of people who fled due to political persecution was similar to those who fled for fear of religious persecution ($p>0.05$), Table 4.9.

Table 4.9 Mean and standard deviation of HTQ Scores and variables

Variable	Mean HTQ Scores (SD)	p-value
Gender		0.800
Male	1.98 (0.68)	
Female	1.94 (0.51)	
Continent		0.586
Asia	1.93 (0.60)	
Non-Asia	2.01 (0.65)	
Education Level		0.561
Primary School and below	2.02 (0.76)	
Secondary School	1.78 (0.56)	
High School and above	1.99 (0.61)	
Arrival in HK		1.128
Less or equal to 1 year	2.07 (0.73)	
2 to 5 year	1.87 (0.58)	
Beyond 5 years	2.08 (0.60)	
Previous Asylum Experience		0.186
Yes	2.29 (0.48)	
No	1.94 (0.63)	
Reason for fleeing from own country		0.977
Political persecution	1.95 (0.64)	
Religious persecution	1.74 (0.63)	
Others	2.05 (0.60)	

Approximately one third of males (36.4%) had PTSD compared with 20% of females ($p>0.05$). Those who had attained college level education more frequently encountered PTSD compared to those with lower levels of education attained ($p>0.05$). Asylum seekers from non-Asian countries more frequently encountered PTSD than those from Asian countries (38.5% vs 24.4%, $p>0.05$). Other sociodemographic variations in PTSD are presented in Table 4.10.

Table 4.10 PTSD and related variables

Variable	With PTSD	Without PTSD	p-value
Gender			0.140
Male	36.4% (20)	63.6% (35)	
Female	20.7% (6)	79.3% (23)	
Education Level			0.182
Primary School and below	25.0% (3)	75.0% (9)	
Secondary School	9.1% (1)	90.9% (10)	
High School and above	36.1% (22)	63.9% (39)	
Continent			0.166
Asia	24.4% (11)	75.6% (34)	
Non-Asia	38.5% (15)	61.5% (24)	
Arrival in HK			0.162
Less than or equal to 1 year	38.1% (8)	61.9% (13)	
2 to 5 years	22.2% (10)	77.8% (35)	
Over 5 years	44.4% (8)	55.6% (10)	
Reason for fleeing			0.586
Political persecution	29.3% (12)	70.7% (29)	
Religious persecution	20.0% (2)	80.0% (8)	
others	36.4% (12)	63.6 % (21)	

4.5.2 Reported Dental Trauma in relation to HTQ Scores and PTSD

The mean HTQ score for asylum seekers claimed to have dental trauma was 2.16 (0.57) and those who did not report experiences of trauma had a mean HTQ score of 1.91 (0.63). Asylum seekers who reported to have received beating to their heads had a greater HTQ score (2.19 (0.60)) than those who had not received such beatings (1.93 (0.62)), $p>0.05$. Asylum seekers who claimed to encounter other types of head injuries had comparable HTQ scores compared to those without such encounters (2.00 (0.54) versus 1.96 (0.64), $p>0.05$), Table 4.11.

Table 4.11 HTQ scores and reported dental trauma

Variable	Mean HTQ scores (SD)	p-value
Reported Dental Trauma		0.124
Yes	2.16 (0.57)	
No	1.91 (0.63)	
Beating to Head		0.164
Yes	2.19 (0.60)	
No	1.93 (0.62)	
Other Types of Injury		0.799
Yes	2.00 (0.54)	
No	1.96 (0.64)	

Asylum seekers who reported dental trauma more frequently encountered PTSD than those who did not (52.6% vs 24.6%, $p<0.05$), Table 4.12. Asylum seekers who reported beatings to the head more frequently encountered PTSD than those who did not (53.8% vs 26.8%, $p>0.05$). Asylum seekers who reported other head injuries more frequently encountered PTSD than those who did not (46.2% vs 28.2%, $p>0.05$).

Table 4.12 PTSD and reported dental trauma

	With PTSD % (n)	**Without PTSD % (n)**	**p-value**
No report of dental trauma	24.6 (16)	75.4 (49)	0.023
Report of dental trauma	52.6 (10)	47.4 (9)	
No report of beatings to the head	26.8 (19)	73.2 (52)	0.098
Report of beatings to the head	53.8 (7)	46.2 (6)	
No report of other head injuries	28.2 (20)	71.8 (51)	0.209
Report of other head injuries	46.2 (6)	53.8 (7)	

A higher mean HTQ scores is found in asylum seekers presented with clinical dental trauma than those without clinical dental trauma, but not significantly so. There was no significantly correlation between HTQ scores and number of teeth with trauma (r 0.015, p=0.89), Table 4.13.

Table 4.13 HTQ Scores and clinical evidence of dental trauma

Variable	Mean HTQ Scores (SD)	p-value
Dental Trauma		0.656
Yes	2.00 (0.57)	
No	1.94 (0.68)	
Scarring		0.264
Yes	1.71 (0.39)	
No	1.99 (0.64)	

Asylum seekers who had clinical dental trauma more frequently encountered PTSD than those did not have dental trauma (34.1% vs 27.5%, p>0.05), Table 4.19. Asylum seekers who had facial scars less frequently encountered PTSD than those had facial scars (14.3% vs 32.5%, p>0.05), Table 4.14.

Table 4.14 PTSD and clinical evidence of dental trauma

	With PTSD % (n)	**Without PTSD % (n)**	**p-value**
Without clinical dental trauma	27.5 (11)	72.5 (29)	0.638
With clinical dental trauma	34.1 (15)	65.9 (29)	
Without facial scarring	32.5 (25)	67.5 (52)	0.428
With facial scarring	14.3 (1)	85.7 (6)	

4.5.3 Caries Experience in relation to HTQ Scores and PTSD

Overall dental caries experience (DMFT), number of decayed teeth (DT), number of filled teeth (FT), number of missing teeth (MT) were not significantly correlated with HTQ scores. FT had the strongest correlation with HTQ scores (r -0.101), Table 4.15.

Table 4.15 Correlation between HTQ Scores and variables

Variable	Pearson's correlation value	p-value
DT	0.061	0.581
MT	-0.001	0.991
FT	-0.101	0.359
DMFT	0.002	0.986

Subjects with PTSD had similar caries experience compared to those without PTSD (3.06 (2.61) vs 4.59 (5.05), p>0.05).

4.5.4 Periodontal Health Status and HTQ Scores and PTSD

There were no significant variations in HTQ scores with respect to periodontal health status as assessed by the CPI index (p>0.05), Table 4.16.

Table 4.16 Mean and standard deviation of HTQ Score and maximum CPI

Maximum CPI	Mean HTQ Scores (SD)	p-value
2	1.93 (0.53)	
3	2.12 (0.71)	1.700
4	1.79 (0.60)	

Asylum seekers who had PTSD had a similar prevalence of periodontal pockets compared to those without (33.3% vs 27.8%, p>0.05).

5.0 DISCUSSION

Given the limitations of time and resources, the sample size of the project was limited to 100 participants. The response rate to participation in the project was high (~90%), which in part relates to the involvement of the NGOs providing ownership of the project by the asylum seekers. In addition, the high response rate reflects the oral health concerns of the refugees and their willingness to participate in dental programmes. More than half of asylum seekers were from Asia, specifically Sri Lanka, which recently encountered/experienced civil war. This explains the high prevelance of this group among the asylum seekers. For the most part, asylum seekers arrived in Hong Kong in the past three years, which may reflect the transient nature of the population who often are resettled elsewhere.

Most (over 60%) experienced dental problems since their arrival in Hong Kong which concurs with previous reports of poor oral health among asylum seekers [(19)]. Despite experiencing oral health problems, relatively few managed to access dental service (less than 25%); financial concerns and being unsure where to go were key reasons why asylum seekers, despite having dental problems, did not access dental care. Asylum seekers and NGOs working with them need to be made aware of provisions for dental care in the community.

Dental caries experiences was high (>80% DMFT >0) and for the most part this related to untreated dental decay (>60%), while the overall dental caries experiences of asylum seekers is not disimilar to the Hong Kong adult population in general [(20)]. The prevalence of untreated decay is considerably larger, which is likely to reflect considerable neglect of oral health during periods of unrest and turmoil, exacerbated by

inability to access care in foreign territories [19]. Periodontal health was somewhat poorer than adults in the general Hong Kong population, with more than half having periodontal pockets. The poor periodontal health is likely to be attributed again to neglect of oral health during periods of unrest and turmoil, stress during periods of displacement and lack of access to periodontal care. Experiences of dental trauma were highly prevalent, with one in two asylums seekers having clinical evidence of dental trauma, for the most part involving loss of enamel and dentine. The high prevalence of dental trauma is likely to reflect the experiences of beatings to the head, and other types of head trauma that the asylum seekers commonly reported. This draws attention to the lasting physical affects of trauma that asylum seekers encountered and illustrates the role the dental teams can play in collaborating trauma evidence of asylum seekers experiences as well as alleviating the problems they encountered [13].

In assessing psychological distress among the asylum seekers, the Harvard Trauma Questionnaire was employed. The HTQ has been used among a number of different asylum seekers groups in different countries. The responses to the HTQ illustrate the many disturbing events and theaftermath that asylum seekers experience and endure. Over a quarter had evidence of experiencing of Post-traumatic Stress Disorder (PTSD) which concurs with other reports of PTSD among asylum seekers [3]. This has implications for dental teams who come in contact with asylum seekers. They need to be sensitive to the asylum seekers' condition and modify the delivery of treatment accordingly.

There were no sociodemographic differences in HTQ scores or PTSD experiences amongst asylum seekers. The male asylums seekers tended to have higher HTQ scores

and more frequently encountered PTSD, which may reflect that males are more likely to be persecuted in times upon arrest. Interestingly, those who had resided in Hong Kong for more than five years had the highest HTQ scores and the highest prevalence of PTSD compared to more recent arrivals. This suggests that psychological disturbances may not go away with time.

Dental caries experiences were not significantly correlated with HTQ scores and there was no significant difference in DMFT between those with and without PTSD. There was a stronger association between periodontal health status and psychological trauma experiences. Of note a higher proportion of those with periodontal pockets had PTSD compared to those without periodontal pockets, although not significantly so. This finding may reflect the relationship between psychological distress and periodontal diseases [(21)].

Those who reported experiences of dental and facial trauma tended to have higher HTQ scores than those who did not report such events. Moreover, over 50% of those with PTSD reported experiencing dental trauma. There was a significant association between reported dental trauma and psychological distress among the asylums seekers. This draws attention to how the dental team can play a role in documenting the oral health experiences of victims of torture and thereby provides forensic evidence to collaborate asylum seekers reports. Moreover, the dental team can play a role in providing basic health oral health care service for victims of torture as for the most part their oral health needs are neglected and untreated.

6.0 CONCLUSIONS

Poor oral health was common among the asylum seekers who participated in this community health project. Dental caries experience was high and most subjects had untreated decayed teeth (61.9%, 52; DT 1.51 (SD 2.09)). Periodontal health was poor with over half having periodontal pockets (57.1%, 48). One in five reported experiencing dental trauma from assaults (22.6%, 19) and 53.6% (45) had clinical evidence of dental trauma.

Experience of self-reported dental problems was high among the asylum seekers and most (63.1%, 53) experience one or more dental problem since coming to Hong Kong but very few managed to access dental care (24.5%, 13/53).

Psychological distress was prevalent among the asylum seekers who participated in this project (The mean Harvard Trauma Questionnaire (HTQ) Score was 2.16 (0.57)) and approximately a third (31.0%, 26) had Post-traumatic Stress Disorder (PTSD). Self-reports of dental trauma from assaults were associated with experience of PTSD.

7.0 RECOMMEDATIONS

Asylum seekers in Hong Kong have many oral health needs which for the post part are neglected and untreated. There is a need for organizations to be aware of existing pain-relief services offered by the government and also services of voluntary dental organizations.

Experience of dental trauma among asylum seekers is high as most are victims of torture and/or assault. The dental team can play a special role in providing forensic evidence of trauma to collaborate with asylum seekers reports and to aid their refugee status applications.

In providing oral health care service to asylum seekers it is important to be aware of their underlying psychological conditions, as Post-trauma Stress Disorder is not uncommon and this has implications for their dental management.

8.0 ACKNOWLEDGEMENTS

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We would like to acknowledge the following organizations and members. Without their help, this project would not have been possible.

- Prince Philip Dental Hospital
- Christian Action
- Vision First

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10.0 APPENDICES

Appendix 1 Invitation Letter

香 港 大 學
THE UNIVERSITY OF HONG KONG

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Dear Miss Mona Lenz,

We are a group of senior dental students of the Faculty of Dentistry, The University of Hong Kong. As partial fulfilment for our degree we are required to undertake a community health project involving engagement with the community at large. This year given the considerable attention on asylum seekers in Hong Kong, we would like to offer our assistance to asylum seekers/refugees.

We understand that asylum seekers face great hardship in Hong Kong because they are not recognised by the Immigration Department. We are also aware that many asylum seekers (if not all) have been tortured. In many cases this torture involves the oro-facial region and thus clear evidence of trauma to their dentition (teeth) and/or jaws remains. We would like to offer the asylum seekers at your organization the opportunity of a free oral examination. In return, we will provide an oral health report detailing evidence of trauma observed which may be of assistance to the asylum seekers. In addition, we would be delighted to provide oral health information to asylum seekers in line with the health workshops that you currently offer as a part of your services at Chungking Mansions.

To avail of our services please contact our group representative Jamie Hong at dph4611@gmail.com or Professor McGrath at mcgrathc@hku.hk . We look forward to serving your organization and to being of assistance to the asylum seekers.

Sincerely yours,

Jamie Hong

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Appendix 2 Questionnaire

Faculty of Dentistry
The University of Hong Kong

Ref no. _____

We would like to ask you about your past history and symptoms experienced. The information will be used to help us to provide better care. The answer to the questions will be kept confidential.

Section A. Previous Dental Experiences

1. Have you experienced any dental problems since you came to Hong Kong?
   - ☐ No (skip to Question 4)
   - ☐ Yes, associated with pain
   - ☐ Yes, not associated with pain

2. How did you manage the most recent dental problem you had (multiple answers possible)?
   - ☐ Went to a dentist (skip to Question 3a)
   - ☐ Went to a medical doctor
   - ☐ Self medicated (skip to Question 3b)
   - ☐ Others, specify: _____

3a. If you went to see a dentist/ doctor because of the most recent dental problem, where did you receive such services in Hong Kong?
   - ☐ Private dental clinic
   - ☐ Government dental clinic
   - ☐ Non-government/ Charity organization clinic
   - ☐ Prince Philip Dental Hospital
   - ☐ Others, specify: _____

3b. If you did not go to see a dentist/ doctor because of your dental problem, what was the main reason for not doing so?
   - ☐ Financial concerns
   - ☐ Unsure of where to go
   - ☐ Problem was not serious to require treatment
   - ☐ Did not want to be identified by authorities
   - ☐ Others, specify: _____

4. When was the last time you visited a dentist (can be before or after you arrived Hong Kong)?
   - ☐ Never
   - ☐ More than 1 year ago
   - ☐ Less than/ equal to 1 year ago

5. How often do you brush your teeth?
   - ☐ Less often than once a day
   - ☐ Once a day
   - ☐ Twice a day or more

6. How frequently do you snack between main meals (breakfast, lunch and dinner)?
   - ☐ Never
   - ☐ Sometimes
   - ☐ Everyday

Appendix 2 Questionnaire (Continued)

Faculty of Dentistry
The University of Hong Kong

Section B. Experience of Dental, Facial and/or Head Trauma

1. Dental (tooth) trauma (by yourself or by others)
   ☐ No
   ☐ Yes, no loss of consciousness
   ☐ Yes, loss of consciousness, specify duration: _____ minutes

2. Beatings to the head
   ☐ No
   ☐ Yes, no loss of consciousness
   ☐ Yes, loss of consciousness, specify duration: _____ minutes

3. Suffocation or strangulation
   ☐ No
   ☐ Yes, no loss of consciousness
   ☐ Yes, loss of consciousness, specify duration: _____ minutes

4. Other types of injury to the head (e.g. shrapnel, burns, etc.)
   ☐ No
   ☐ Yes, no loss of consciousness
   ☐ Yes, loss of consciousness, specify duration: _____ minutes

5. Starvation
   ☐ No
   ☐ Yes, no loss of consciousness
   ☐ Yes, loss of consciousness, specify duration: _____ minutes
   If yes, normal weight: _____kg; starvation weight: _____kg
   Were you near death due to starvation? ☐ No ☐ Yes

6. Indicate on the diagrams where you experienced trauma as a result of physical abuse?

Appendix 2 Questionnaire (Continued)

Faculty of Dentistry
The University of Hong Kong

Section C. Trauma Symptoms Experienced

The following are symptoms that people sometimes have after experiencing hurtful or terrifying events in their lives. Please read each one carefully and decide how much the symptoms bothered you in the past week.

	Trauma Symptoms	(1) Not at all	(2) A little	(3) Quite a bit	(4) Extremely
1.	Recurrent thoughts or memories of the most hurtful or terrifying events				
2.	Feeling as though the event is happening again				
3.	Recurrent nightmares				
4.	Feeling detached or withdrawn from people				
5.	Unable to feel emotions				
6.	Feeling jumpy, easily startled				
7.	Difficulty concentrating				
8.	Trouble sleeping				
9.	Feeling on guard				
10.	Feeling irritable or having outbursts of anger				
11.	Avoiding activities that remind you of the traumatic or hurtful event				
12.	Inability to remember parts of the most hurtful or traumatic events				
13.	Less interest in daily activities				
14.	Feeling as if you don't have a future				
15.	Avoiding thoughts or feelings associated with the traumatic or hurtful events				
16.	Sudden emotional or physical reaction when reminded of the most hurtful or traumatic events				
17.	Feeling that you have less skills than you had before				
18.	Having difficulty dealing with new situations				
19.	Feeling exhausted				
20.	Bodily pain				
21.	Troubled by physical problem(s)				
22.	Poor memory				
23.	Finding out of being told by other people that you have done something that you cannot remember				
24.	Difficulty paying attention				
25.	Feeling as if you are split into two people and one of you is watching what the other is doing				
26.	Feeling unable to make daily plans				

Appendix 2 Questionnaire (Continued)

Faculty of Dentistry
The University of Hong Kong

	Trauma Symptoms	(1) Not at all	(2) A little	(3) Quite a bit	(4) Extremely
27.	Blaming yourself for things that have happened				
28.	Feeling guilty for having survived				
29.	Hopelessness				
30.	Feeling ashamed of the hurtful or traumatic events that have happened to you				
31.	Feeling that people do not understand what happened to you				
32.	Feeling others are hostile to you				
33.	Feeling that you have no one to rely upon				
34.	Feeling that someone you trusted betrayed you				
35.	Feeling humiliated by your experience				
36.	Feeling no trust in others				
37.	Feeling powerless to help others				
38.	Spending time thinking why these events happened to you				
39.	Feeling that you are the only one that suffered these events				
40.	Feeling a need for revenge				

Appendix 2 Questionnaire (Continued)

Section D. Demographic Information

Name: _____ (First) _____ (Last)

Date of Birth: _____ (DD/MM/YYYY)

Sex: ☐ M / ☐ F

Continent of origin:
☐ Africa, specify country: _____
☐ North America, specify country: _____
☐ South America, specify country: _____
☐ Asia, specify country: _____
☐ Europe, specify country: _____
☐ Oceania, specify country: _____
☐ Others, specify country: _____

Formal education level (highest level attained):
☐ No formal education
☐ Primary School
☐ Middle School (12 - 15 years old)
☐ High School (15 - 18 years old)
☐ College

Arrival in Hong Kong:
☐ Less than or equal to 1 year
☐ 2 - 5 years
☐ More than 5 years

Have you previously sought asylum in another country? (Other than Hong Kong)
☐ No
☐ Yes

Main reason for fleeing from your own country:
☐ Political persecution
☐ Religious persecution
☐ Economic reasons
☐ Others, specify: _____